

1 1. In a network configuration that includes a client computer system, a server
2 computer system and a plurality of proxy computer systems that the client computer
3 system would need to communicate through in order to communicate with the server
4 computer system, the plurality of proxy computer systems including at least a first proxy
5 that requires authentication using first authentication data and a second proxy that requires
6 authentication using second authentication data, a method of the client computer system
7 transmitting a request to the server computer system notwithstanding that the first and
8 second proxies require different authentication data, the method comprising the following:

9 an act of the client computer system dispatching a first request for a service
10 through the first proxy;

11 an act of the client computer system receiving a first authentication request
12 from the first proxy;

13 an act of the client computer system retrieving first authentication data
14 associated with the first proxy;

15 an act of the client computer system dispatching a second request for the
16 service, the second request including the first authentication data;

17 an act of the client computer system receiving a second authentication
18 request from the second proxy, the first proxy using the first authentication data to
19 authenticate the client computer system and forwarding the second request for the
20 service to the second proxy, the second proxy then receiving the second request for
21 the service;

22 an act of the client computer system retrieving second authentication data
23 associated with the second proxy; and

1 an act of the client computer system dispatching a third request for the
2 service to the server computer system, the third request including the first
3 authentication data and the second authentication data, the first proxy using the first
4 authentication data to authenticate the client computer system and thereafter
5 forwarding the third request for the service to the second proxy, the second proxy
6 using the second authentication data to authenticate the client computer system and
7 thereafter forwarding the third request to the server computer system or to a third
8 proxy that requires third authentication data.

9
10 2. A method in accordance with Claim 1, further comprising the following:

11 an act of the first proxy removing the first authentication data from the third
12 request; and

13 an act of the first proxy forwarding the third request to the second proxy
14 without the first authentication data.

15
16 3. A method in accordance with Claim 1, wherein the act of the client
17 computer system dispatching a third request for the service to the server computer system
18 comprises the following:

19 an act of the client computer system including the first and second
20 authentication data in the third request using an HTTP authentication method.

21
22 4. A method in accordance with Claim 3, wherein the act of the client
23 computer system including the first and second authentication data in the third request
24 using an HTTP authentication method comprises the following:

1 an act of identifying the first authentication data using a first realm
2 associated with the first proxy; and

3 an act of identifying the second authentication data using a second realm
4 associated with the second proxy.

5
6 5. A method in accordance with Claim 2, wherein the act of the client
7 computer system including the first and second authentication data in the third request
8 using an HTTP authentication method comprises the following:

9 an act of the client computer system including the first and second
10 authentication data in a WWW-Authenticate Response Header associated with the
11 digest authentication method.

12
13 6. A method in accordance with Claim 1, wherein the first and second proxies
14 are administered by different entities.

15
16 7. A method in accordance with Claim 6, wherein the client computer system
17 comprises a wireless device, and the first proxy is administered by a wireless carrier.

18
19 8. A method in accordance with Claim 7, wherein the second proxy is
20 administered by a corporate entity.

21
22 9. A method in accordance with Claim 1, wherein the first authentication data
23 comprises a first user ID and a first password.

1 10. A method in accordance with Claim 1, wherein the second authentication
2 data comprises a second user ID and a second password.

3
4 11. A method in accordance with Claim 1, wherein the act of the client
5 computer system dispatching a first request, the act of the client computer system receiving
6 a first authentication request, the act of the client computer system dispatching a second
7 request, the act of the client computer system receiving a second authentication request,
8 and the act of the client computer system dispatching a third request are each performed in
9 accordance with the HyperText Transport Protocol (HTTP).

10
11 12. A method in accordance with Claim 1, wherein the act of the client
12 computer system retrieving first authentication data and the act of the client computer
13 system dispatching a second request are each performed automatically, without user
14 intervention, upon completion of the act of the client computer system receiving a first
15 authentication request from the first proxy.

16
17 13. A method in accordance with Claim 12, wherein the act of the client
18 computer system retrieving second authentication data and the act of the client computer
19 system dispatching a third request are each performed automatically, without user
20 intervention, upon completion of the act of the client computer system receiving a second
21 authentication request from the first proxy.

22
23 14. A method in accordance with Claim 1, wherein the act of the client
24 computer system retrieving second authentication data and the act of the client computer

using the second authentication to thereby allow communication between the client computer system and the server computer system.

1 16. In a computer program product for use in a network configuration that
2 includes a client computer system, a server computer system and a plurality of proxy
3 computer systems that the client computer system would need to communicate through in
4 order to communicate with the server computer system, the plurality of proxy computer
5 systems including at least a first proxy that requires authentication using first
6 authentication data and a second proxy that requires authentication using second
7 authentication data, the computer program product for implementing a method of the client
8 computer system transmitting a request to the server computer system notwithstanding that
9 the first and second proxies require different authentication data, the computer program
10 product comprising a computer-readable medium having computer-executable instructions
11 for performing the following:

12 an act of the client computer system causing a first request for a service to
13 be dispatched through the first proxy;

14 an act of the client computer system detecting the receipt of a first
15 authentication request from the first proxy;

16 an act of the client computer system causing first authentication data
17 associated with the first proxy to be retrieved;

18 an act of the client computer system causing a second request for the service
19 to be dispatched, the second request including the first authentication data;

20 an act of the client computer system detecting the receipt of a second
21 authentication request from the second proxy, the first proxy using the first
22 authentication data to authenticate the client computer system and forwarding the
23 second request for the service to the second proxy, the second proxy then receiving
24 the second request for the service;

1 an act of the client computer system causing second authentication data
2 associated with the second proxy to be retrieved; and

3 an act of the client computer system causing a third request for the service
4 to be dispatched to the server computer system, the third request including the first
5 authentication data and the second authentication data, the first proxy using the first
6 authentication data to authenticate the client computer system and thereafter
7 forwarding the third request for the service to the second proxy, the second proxy
8 using the second authentication data to authenticate the client computer system and
9 thereafter forwarding the third request to the server computer system or to a third
10 proxy that requires third authentication data.

11
12 17. A computer program product in accordance with Claim 16, wherein the
13 computer-executable instructions for performing the act of the client computer system
14 causing a third request for the service to be dispatched to the server computer system
15 comprises computer-executable instructions for performing the following:

16 an act of including the first and second authentication data in the third
17 request using an HTTP authentication method.

18
19 18. A computer program product in accordance with Claim 17, wherein the
20 computer-executable instructions for performing the act of including the first and second
21 authentication data in the third request using an HTTP authentication method comprises
22 computer-executable instructions for implementing the following:

23 an act of identifying the first authentication data using a first realm
24 associated with the first proxy; and

1 an act of identifying the second authentication data using a second realm
2 associated with the second proxy.

3
4 19. A computer program product in accordance with Claim 17, wherein the
5 computer-executable instruction for performing the act of including the first and second
6 authentication data in the third request using an HTTP authentication method comprises
7 computer-executable instructions for implementing the following:

8 an act of including the first and second authentication data in a WWW-
9 Authenticate Response Header associated with the digest authentication method.

10
11 20. A computer program product in accordance with Claim 16, wherein the
12 computer-executable instructions for implementing an act of the client computer system
13 causing a first request to be dispatched, the act of the client computer system detecting the
14 receipt of a first authentication request, the act of the client computer system causing a
15 second request to be dispatched, the act of the client computer system detecting the receipt
16 a second authentication request, and the act of the client computer system causing a third
17 request to be dispatched are each performed in accordance with the HyperText Transport
18 Protocol (HTTP).

19
20 21. A computer-program product in accordance with Claim 16, wherein the
21 computer-readable medium is a physical computer-readable medium.
22

1 22. In a network configuration that includes a client computer system, a server
2 computer system and a plurality of proxy computer systems that the client computer
3 system would need to communicate through in order to communicate with the server
4 computer system, the plurality of proxy computer systems including at least a first proxy
5 that requires authentication using first authentication data and a second proxy that requires
6 authentication using second authentication data, a method of the client computer system
7 connecting to the server computer system notwithstanding that the first and second proxies
8 require different authentication data, the method comprising the following:

9 an act of the client computer system dispatching a connect request to the
10 first proxy;

11 an act of the client computer system receiving a first authentication request
12 from the first proxy;

13 an act of the client computer system retrieving first authentication data
14 associated with the first proxy;

15 an act of the client computer system dispatching a connect request to the
16 second proxy, the connect request to the second proxy including the first
17 authentication data, wherein the first proxy uses the first authentication data to
18 authenticate the client computer system, enters byte forwarding mode, and forwards
19 the connect request to the second proxy server;

20 an act of the client computer system receiving, via the first proxy, a second
21 authentication request from the second proxy;

22 an act of the client computer system retrieving second authentication data
23 associated with the second proxy; and

1 an act of the client computer system dispatching a connect request to the
2 server computer system or to a third proxy that requires third authentication data,
3 the connect request to the server computer system or to the third proxy including
4 the first authentication data and the second authentication data, wherein the second
5 proxy uses the second authentication data to authenticate the client computer
6 system, enters byte forwarding mode, and forwarding the connect request to the
7 server computer system or to the third proxy.

8
9 23. A method in accordance with Claim 22, wherein the act of the client
10 computer system dispatching a connect request to the server computer system or to a third
11 proxy comprises the following:

12 an act of the client computer system including the first and second
13 authentication data in the third request using an HTTP authentication method.

14
15 24. A method in accordance with Claim 23, wherein the act of the client
16 computer system including the first and second authentication data in the third request
17 using an HTTP authentication method comprises the following:

18 an act of identifying the first authentication data using a first realm
19 associated with the first proxy; and

20 an act of identifying the second authentication data using a second realm
21 associated with the second proxy.
22

1 25. A method in accordance with Claim 23, wherein the act of the client
2 computer system including the first and second authentication data in the third request
3 using an HTTP authentication method comprises the following:

4 an act of the client computer system including the first and second
5 authentication data in a WWW-Authenticate Response Header associated with the
6 digest authentication method.

7
8 26. A method in accordance with Claim 22, wherein the first and second
9 proxies are administered by different entities.

10
11 27. A method in accordance with Claim 26, wherein the client computer system
12 comprises a wireless device, and the first proxy is administered by a wireless carrier.

13
14 28. A method in accordance with Claim 27, wherein the second proxy is
15 administered by a corporate entity.

16
17 29. A method in accordance with Claim 22, wherein the first authentication
18 data comprises a first user ID and a first password.

19
20 30. A method in accordance with Claim 22, wherein the second authentication
21 data comprises a second user ID and a second password.

22
23 31. A method in accordance with Claim 22, wherein the act of the client
24 computer system dispatching a connect request to the first proxy, the act of the client

1 computer system receiving a first authentication request from the first proxy, the act of the
2 client computer system dispatching a connect request to the second proxy, the act of the
3 client computer system receiving a second authentication request from the second proxy,
4 and the act of the client computer system dispatching a connect request to the server
5 computer system or to a third proxy are performed in accordance with the Secure Socket
6 Layer (SSL) protocol.

7
8 32. A method in accordance with Claim 22, wherein the act of the client
9 computer system dispatching a connect request to the first proxy, the act of the client
10 computer system receiving a first authentication request from the first proxy, the act of the
11 client computer system dispatching a connect request to the second proxy, the act of the
12 client computer system receiving a second authentication request from the second proxy,
13 and the act of the client computer system dispatching a connect request to the server
14 computer system or to a third proxy are performed in accordance with the HyperText
15 Transport Protocol (HTTP).

16
17 33. A method in accordance with Claim 32, wherein the act of the client
18 computer system retrieving first authentication data and the act of the client computer
19 system dispatching a connect request to the second proxy are performed automatically,
20 without user intervention, upon completion of the act of the client computer system
21 receiving a first authentication request from the first proxy.

22
23 34. A method in accordance with Claim 33, wherein the act of the client
24 computer system retrieving second authentication data and the act of the client computer

1 system dispatching a connect request to the server computer system or to a third proxy are
2 performed automatically, without user intervention, upon completion of the act of the
3 client computer system receiving a second authentication request from the second proxy.
4

5 35. A method in accordance with Claim 22, wherein the act of the client
6 computer system retrieving second authentication data and the act of the client computer
7 system dispatching a connect request to the server computer system or to a third proxy are
8 performed automatically, without user intervention, upon completion of the act of the
9 client computer system receiving a second authentication request from the second proxy.
10

1 36. In a network configuration that includes a client computer system, a server
2 computer system and a plurality of proxy computer systems that the client computer
3 system would need to communicate through in order to communicate with the server
4 computer system, the plurality of proxy computer systems including at least a first proxy
5 that requires authentication using first authentication data and a second proxy that requires
6 authentication using second authentication data, a method of the client computer system
7 transmitting a request to the server computer system notwithstanding that the first and
8 second proxies require different authentication data, the method comprising the following:

9 an act of the client computer system dispatching a connect request to the
10 first proxy;

11 a step for the client computer system authenticating to the first proxy using
12 the first authentication data; and

13 a step for the client computer system authenticating to the second proxy
14 using the second authentication to thereby allow communication between the client
15 computer system and the server computer system.

1 37. A computer program product for use in a network configuration that
2 includes a client computer system, a server computer system and a plurality of proxy
3 computer systems that the client computer system would need to communicate through in
4 order to communicate with the server computer system, the plurality of proxy computer
5 systems including at least a first proxy that requires authentication using first
6 authentication data and a second proxy that requires authentication using second
7 authentication data, the computer program product for implementing a method of the client
8 computer system connecting to the server computer system notwithstanding that the first
9 and second proxies require different authentication data, the computer program product
10 comprising computer-executable instructions for performing the following:

11 an act of the client computer system causing a connect request to be
12 dispatched to the first proxy;

13 an act of the client computer system detecting the receipt of a first
14 authentication request from the first proxy;

15 an act of the client computer system causing the first authentication data
16 associated with the first proxy to be retrieved;

17 an act of the client computer system causing a connect request to be
18 dispatched to the second proxy, the connect request to the second proxy including
19 the first authentication data, wherein the first proxy uses the first authentication
20 data to authenticate the client computer system, enters byte forwarding mode, and
21 forwards the connect request to the second proxy server;

22 an act of the client computer system detecting the receipt of a second
23 authentication request from the second proxy;

1 an act of the client computer system causing the second authentication data
2 associated with the second proxy to be retrieved; and

3 an act of the client computer system causing a connect request to be
4 dispatched to the server computer system or to a third proxy that requires third
5 authentication data, the connect request to the server computer system or to the
6 third proxy including the first authentication data and the second authentication
7 data, wherein the second proxy uses the second authentication data to authenticate
8 the client computer system, enters byte forwarding mode, and forwarding the
9 connect request to the server computer system or to the third proxy.

10
11 38. A computer program product in accordance with Claim 37, wherein the
12 computer-executable instructions for performing the act of the client computer system
13 causing a connect request to be dispatched to the server computer system or to a third
14 proxy comprises computer-executable instructions for performing the following:

15 an act of including the first and second authentication data in the third
16 request using an HTTP authentication method.

17
18 39. A computer program product in accordance with Claim 38, wherein the
19 computer-executable instructions for performing the act of including the first and second
20 authentication data in the third request using an HTTP authentication method comprises
21 computer-executable instructions for implementing the following:

22 an act of identifying the first authentication data using a first realm
23 associated with the first proxy; and

1 an act of identifying the second authentication data using a second realm
2 associated with the second proxy.

3
4 40. A computer program product in accordance with Claim 38, wherein the
5 computer-executable instructions for performing the act of including the first and second
6 authentication data in the third request using an HTTP authentication method comprises
7 computer-executable instructions for implementing the following:

8 an act of including the first and second authentication data in a WWW-
9 Authenticate Response Header associated with the digest authentication method.

10
11 41. A computer program product in accordance with Claim 37, wherein the
12 computer-executable instructions for implementing an act of the client computer system
13 causing a connect request to be dispatched to the first proxy, the act of the client computer
14 system detecting the receipt of a first authentication request, the act of the client computer
15 system causing a connect request to be dispatched to the second proxy, the act of the client
16 computer system detecting the receipt a second authentication request, and the act of the
17 client computer system causing a connect request to be dispatched are each performed in
18 accordance with the HyperText Transport Protocol (HTTP).

19
20 42. A computer program product in accordance with Claim 37, wherein the
21 computer-executable instructions for implementing an act of the client computer system
22 causing a connect request to be dispatched to the first proxy, the act of the client computer
23 system detecting the receipt of a first authentication request, the act of the client computer
24 system causing a connect request to be dispatched to the second proxy, the act of the client

1 computer system detecting the receipt a second authentication request, and the act of the
2 client computer system causing a connect request to be dispatched are each performed in
3 accordance with the Secure Socket Layer (SSL) protocol.
4

5 43. A computer-program product in accordance with Claim 37, wherein the
6 computer-readable medium is a physical computer-readable medium.
7

1 44. A computer-readable medium for use in a network configuration that
2 includes a client computer system, a server computer system and a plurality of proxy
3 computer systems that the client computer system would need to communicate through in
4 order to communicate with the server computer system, the plurality of proxy computer
5 systems including at least a first proxy that requires authentication using first
6 authentication data and a second proxy that requires authentication using second
7 authentication data, the computer-readable medium having stored thereon a data structure,
8 the data structure comprising the following:

9 a first field representing authentication data, the first field comprising the
10 following:

11 a second field representing an authentication header that identifies
12 the first field as containing the authentication data;

13 a third field representing authentication data for the first proxy; and

14 a fourth field representing authentication data for the second proxy,

15 wherein the third field comprises the following:

16 a fifth field representing an identifier that identifies the third field as
17 containing authentication data for the first proxy; and

18 a sixth field representing the first authentication data;

19 wherein the fourth field comprises the following:

20 a seventh field representing an identifier that identifies the fourth
21 field as containing authentication data for the second proxy; and

22 an eighth field representing the second authentication data.
23

1 45. A data structure in accordance with Claim 44, wherein the fifth field and the
2 seventh field each identify a realm in accordance with the digest authentication method.

3
4 46. A data structure in accordance with Claim 44, wherein the first and second
5 authentication data in the sixth field and the eighth field, respectively, are at least partially
6 encrypted.

7
8 47. A data structure in accordance with Claim 44, wherein the fifth field
9 comprises the following:

10 a ninth field representing a first user ID recognizable by the first proxy as
11 identifying a user associated with the client computer system; and

12 a tenth field representing a first password recognizable by the first proxy as
13 identifying a password associated with the user;

14 wherein the seventh field comprises the following:

15 an eleventh field representing a second user ID recognizable by the second
16 proxy as identifying the user associated with the client computer system; and

17 a twelfth field representing a second password recognizable by the second
18 proxy as identifying a password associated with the user.

19
20 48. A data structure in accordance with Claim 47, wherein the tenth field and
21 the twelfth field respectively represent the first and second passwords in encrypted form.
22